

ABSTRACT OF THE DISCLOSURE

A stabilizer bar for controlling the roll of an automotive vehicle has left and right sections, each provided with a torsion rod and a torque arm. The torsion rods are aligned along a transverse axis and attached to a structural component of the vehicle, while the torque arms are connected to the left and right control arms of the vehicle's suspension system. In addition, the bar has a coupling between the torsion rods of the two sections and a valve connected to the coupling, all for controlling the torsional stiffness of the bar. The coupling includes a rotor fitted to one of the torsion rods and a housing fitted to the other torsion rod, with the rotor being located in the housing and having ramps facing away from its torsion rod. The housing also contains a piston which is capable of moving axially in the housing, but not rotationally, and it has ramps which face the ramps on the rotor. Between the rotor ramps and the piston ramps lie rollers which transmit forces between the ramps, so that the angular position of the rotor with respect to the housing and piston determines the axial position of the piston in the housing. The piston together with the housing enclose a cavity, the volume of which varies with the change in position of the piston. The cavity contains a magneto-rheological fluid which also occupies the valve. Within the valve are a restrictor and a coil at the restrictor for controlling the viscosity of the fluid there, and this determines the rate at which the fluid is displaced from the cavity, which in turn determines the force required to move the piston and ultimately the torsional stiffness of the stabilizer bar.